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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/700,447	02/06/2001	Moe K. Barani	130815.90026	3721

7590 10/23/2002

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EXAMINER

NGUYEN, TRAN N

ART UNIT	PAPER NUMBER
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2834

DATE MAILED: 10/23/2002

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.
09/700,447

Applicant(s)
Barani et al

Examiner
Nguyen, Tran N

Art Unit
2834



-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136 (a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on Aug 27, 2002
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11; 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 13-22 is/are pending in the application.
- 4a) Of the above, claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 13-22 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claims _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on Feb 6, 2001 is/are a) ☐ accepted or b) ☒ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☒ Acknowledgement is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

*See the attached detailed Office action for a list of the certified copies not received.

- 14) ☒ Acknowledgement is made of a claim for domestic priority under 35 U.S.C. § 119(e).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgement is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892) 4) ☐ Interview Summary (PTO-413) Paper No(s). _____
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948) 5) ☐ Notice of Informal Patent Application (PTO-152)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s). _____ 6) ☐ Other:

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DETAILED ACTION

Priority

1. Receipt is acknowledged of papers submitted under 35 U.S.C. 119(a)-(d), which papers have been placed of record in the PCT file.

Drawings

2. The drawings are objected to under 37 CFR 1.83(a). The drawings must show every feature of the invention specified in the claims. Therefore, the ***third bearing*** must be shown or the feature(s) canceled from the claim(s). No new matter should be entered.

3. The drawings are objected to as failing to comply with 37 CFR 1.84(p)(5) because they do not include the following reference sign(s) mentioned in the description: bearing (32) and bearing (50) as disclosed in the spec., pages 6-7, are not shown. A proposed drawing correction or corrected drawings are required in reply to the Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance.

Claim Rejections - 35 USC § 112

4. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

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5. **Claims 13-22** are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

In claim 13, “the other of said bearings is disposed part way along the length of said conveyor roller” is indefinite because of the following:

the phrase “disposed part way” in “bearings is disposed part way along the length” is unclear, should it be the bearing is disposed *spacing apart from or disposed a distance away* from said proximal one end of the conveyor roller?

Also, the term “the length” in “the length of said conveyor roller” lacks antecedent basis.

In claim 14, “a third bearing disposed at an end of the conveyor roller opposite the bearing proximate to one end of the conveyor roller” is indefinite because of the following:

the phrase: “the bearing proximate to one end of the conveyor roller” is unclear because the definition of “proximate” is *near or closed to*. Thus, “proximate” is a relative term by definition. In claim 13 there are two bearings, one bearing is recited to be disposed proximate to one end of the roller, and the other is disposed *along the length of the roller which is also can be interpreted as proximate to, i.e., closed to or near to, either end of the roller*. Therefore, it is unclear where is the location of the third bearing with respect to either one of the two previously recited bearings.

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Should it be, as for claim 13, "a first bearing disposed at first end of the roller, a second bearing disposed along a length of the roller and at a predetermined distance from second end of the roller". Also, as for claim 14, "a third bearing disposed at the second end of the conveyor roller opposite the first bearing at the first end of the conveyor roller" ?

In claim 16, "the housing contacts the conveyor roller with a force fit" is indefinite because whether it is done by force fit or any other means is a process of assembling the product, i.e., the roller with the motor assembly. The method of forming the device is not germane to the issue of patentability of the device itself. (*In re Thorpe*, 227 USPQ 964, 966.)

Claim Rejections - 35 USC § 103

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

7. **Claims 13, 15 and 17**, as understood, are rejected under 35 U.S.C. 103(a) as being unpatentable over Syverson (US 5918728) in view of Pelstring (US 6057616).

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Syverson substantially discloses the claimed invention having a stator; a rotor; and two spaced apart bearings (30, 32) (see the figure and cols 3-4). Syverson only differs from the claimed invention in one respect that is a cylindrical metal housing forming a part of the rotor for receiving the permanent magnets (P.Ms) and supporting the shaft.

Pelstring, however, discloses (fig 2) a permanent magnet brushless DC motor comprising rotor having a plurality of P.Ms received by a metal housing (28), wherein the rotor metal housing is disposed inside and secured to the motor casing (26) for supporting the shaft and the stator.

The test for obviousness is not whether the features of a secondary reference may be bodily incorporated into the structure of the primary reference; nor is it that the claimed invention must be expressly suggested in any one or all of the references. Rather, the test is what the combined teachings of the references would have suggested to those of ordinary skill in the art. See *In re Keller*, 642 F.2d 413, 208 USPQ 871 (CCPA 1981). In this instant case, those skilled in the art would realize that the rotor metal housing, as taught by Pelstring, would not only provide mechanical support for the PM rotor assembly but also function as a magnetic flux return means in the rotor's magnetic circuit, i.e., the iron housing is a magnetic conducting means for the magnetic paths between PM segments. Hence, the rotor assembly would be improved in both mechanical and magnetical strengths.

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Thus, it would have been obvious to one skilled in the art at the time the invention was made to modify the Syverson's roller motor by providing a metal housing forming a part of the rotor for receiving the permanent magnets and supporting the shaft and the stator, as taught by Pelstring. Doing so would provide a means to mechanically support the PM segments and magnetically conducting magnetic flux paths in the rotor's magnetic circuit to enhance magnetic characteristics of the rotor.

8. **Claim 14**, as understood, is rejected under 35 U.S.C. 103(a) as being unpatentable over Syverson and Pelstring, as applied in the rejections against the base claims, and further in view of Shiba et al (US 5524805).

The combination of Syverson and Pelstring refs discloses the claimed invention, except for the limitations of the motor assembly having a third bearing.

Shiba, however, teaches a motor (E) assembly extends inside the roller (R), wherein the motor is supported by two bearings (7) at opposite ends of the roller and other bearings being disposed along the length of the roller to support shaft (16) (fig 3) for providing further support to the motor and the roller.

Hence, it would have been obvious to one having ordinary skill in the art at the time the invention was made to employ at least three bearings, as taught by Shiba, because this would provide further support for the roller.

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In addition, those skilled in the art would realize that bearings are well know for providing mechanical support for rotary elements in motors, generators or rotary devices. Thus, employing a plurality of bearings to provide support along a length of the rotary device is a matter of obvious engineering design choice which requires only necessary mechanical skills in the art. Syverson discloses two bearing supporting at both ends of the roller to support the roller and its motor. Thus, it would have been obvious to one having ordinary skill in the art at the time the invention was made to include more than two bearings at suitable locations along the roller to support the roller and its motor. It has been held that mere duplication of the essential working parts of a device involves only routine skill in the art. *St. Regis Paper Co. vs. Bemis Co.*, 193 USPQ 8.

9. **Claims 18-19** are rejected under 35 U.S.C. 103(a) as being unpatentable over Syverson and Pelstring, as applied in the rejections against the base claims, and further in view of level of ordinary skills of a worker in the art and Fujitani et al (US 5834866).

The combination of Syverson and Pelstring refs discloses the claimed invention, except for the limitations of the stator coil being configure with a number of turns and the coil's wire is selected with a gauge to produce 10RMS volts per 100 RPM for an applied stator voltage of 24 RMS volts per phase, and each stator coil encircles a single stator tooth.

Regarding a selection of the wire's gauge size and a number of turns of the wire to form a stator coil so that the stator coil would produce 10RMS volts per 100 RPM for an applied stator

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voltage of 24 RMS volts per phase, this is a matter of obvious engineering design choice because of the following:

Syverson discusses about the gauge size of the wire and the speed of the motor (col 4, lines 1-58) at various size of the wire gauge and various coil turns of stator's windings. Thus, those skilled in the art would understand that, by applying the Syverson's disclosure, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the stator of the Syverson's motor by selecting an appropriate wire's gauge size and determine an appropriate number of coil turns in order to obtain a workable range between the ratio of the voltage to the speed of the motor. It has been held that where the general conditions of a claim are disclosed in the prior art, discovering the optimum or workable ranges, in this case the range of number of turns of the windings and the range of the wire gauge size, involves only routine skill in the art. **In re Aller, 105 USPQ 233.**

Regarding each stator coil encircle a single stator tooth, Fujitani discloses a stator having each stator coil concentrately wound around each stator pole in an encircled manner for obtaining high magnetic efficiency for the motor. Concentrate winding by encircling coil around each magnetic pole is well known in the art (see cited refs).

Thus, it would have been obvious to one skilled in the art at the time the invention was made to modify the Syverson's roller motor by configuring the stator winding as concentrate

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winding each coil per stator pole, as taught by Fujitani. Doing so would obtain high magnetic efficiency for the motor.

10. **Claims 20-22** are rejected under 35 U.S.C. 103(a) as being unpatentable over Syverson and Pelstring, as applied in the rejections against the base claim, and further in view of Von Der Heide (US 4882511).

Syverson discloses the motor is a brushless motor, i.e., a motor having a driving circuit that is a circuit electronically commutates current to the stator coil. However, Syverson does not disclose the electronic controller circuit with position sensors. Thus, the combination of Syverson and Pelstring refs discloses the claimed invention, except for the limitations of the sensor having three Hall effect devices mounted on a circuit board with electronic circuit controller for controlling commutation of current to the stator.

Von Der Heide, however, teaches a brushless motor having an electronic controller including three position sensors (42-44) disposed on a circuit board located within a motor housing (figs 2-3) for providing a motor with improving torque constancy. The Examiner also takes Official Notice that position sensor is a well-known component in dynamoelectric machinery art.

Thus, it would have been obvious to one skilled in the art at the time the invention was made to modify the Syverson's roller motor by providing a position sensor having three Hall effect devices mounted on a circuit board with electronic circuit controller for controlling

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commutation of current to the stator, as taught by Von Der Heide. Doing so would provide the motor with a detection means for positioning the rotor for improving torque constancy of the motor.

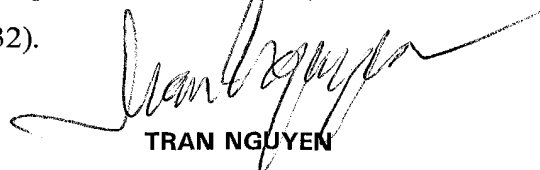
11. *Applicant's amendment necessitated the new ground(s) of rejection* presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for response to this final action is set to expire THREE MONTHS from the date of this action. In the event a first response is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event will the statutory period for response expire later than SIX MONTHS from the date of this final action.

Conclusion

12. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Tran Nguyen whose telephone number is (703) 308-1639.

Any inquiry of a general nature or relating to the status of this application should be directed to the Group Receptionist whose telephone number is (703) 308-0956. The fax phone number for this Group is (703) 305-3431 (32).



TRAN NGUYEN

PRIMARY PATENT EXAMINER

TC-2800